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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of: Confirmation No. 8997

Mehryar GARAKANI Group Art Unit No.: 2662

Serial No.: 09/524,725 Examiner: Christopher M. SWICKHAMER

Filed: March 14, 2000

For: A METHOD OF DETERMINING A DATA LINK PATH IN A MANAGED NETWORK

MS Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

Sir:

This Appeal Brief is submitted in support of the Notice of Appeal filed August 9, 2004.

I. REAL PARTY IN INTEREST

Cisco Technology, Inc., a wholly-owned subsidiary of Cisco Systems, Inc., of San Jose, California, is the real party in interest.

II. RELATED APPEALS AND INTERFERENCES

Applicant is unaware of any related appeals or interferences.

III. STATUS OF CLAIMS

Claims 1-36 are pending in this application.

Claims 1-5, 10-18, and 23-36 have been finally rejected, and are the subject of this appeal.

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop Appeal Brief – Patents, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450

on 10/6/04 by Teresa Austin

Claims 6-9 and 19-22 include allowable subject matter but have been objected to as being dependent on a rejected base claim.

IV. STATUS OF AMENDMENTS

No amendments were filed after the Final Office Action mailed on February 11, 2004.

V. SUMMARY OF THE INVENTION

Many networks are managed and maintained by a network administrator or network manager. To effectively maintain a network, the network administrator needs to have current information about devices in the network and how the devices are interconnected. The Open Systems Interconnection ("OSI") network reference model defines seven logical layers useful in classifying network management information. Layer 2 and layer 3 refer to the data link layer and the network layer, respectively. A network administrator can use Layer 2 connectivity information to understand the physical topology of the network. The topology is a representation of the type of devices in the network and how interfaces of the devices are physically linked. (Application, page 1, line 21 to page 2, line 4.)

However, knowing the physical topology of the network may be insufficient for diagnosing an error in the network. Path tracing for an IP packet is one technique of gathering information on errors and configuration in an Internet Protocol ("IP") network. Performing IP path tracing both at Layer 3 and Layer 2 produces benefits. The present application refers to a Layer 2 IP path as "data link path." Generating a data link path is important for network monitoring and diagnostics, because the information obtained from IP path tracing performed at Layer 3 may be insufficient. For example, IP path tracing at Layer 3 identifies a path from router to router, but does not identify certain network devices, such as LANs switches and bridges, that

an IP packet may traverse from a source device to a destination device. (Application, page 2, line 23 to page 3, line 9.)

The present invention comprises, in one aspect, a method for determining a logical path in a managed network between a source device and a destination device at a data link layer, by creating and storing a Connected Group Space representation of network devices based on a topology space representation of the network devices; identifying an optimized path in the Connected Group Space representation; transforming the optimized path into the topology space representation; and creating and storing the optimized path that was transformed into the topology space representation as the data link layer path. (Application, page 4, lines 1-10.)

According to another aspect of the invention, creating and storing a Connected Group Space representation further comprises of: creating one Connected Group node for any pairs of interfaces across a point-to-point link in the topology space representation; creating one Connected Group node for any interfaces of the managed network that are directly connected by virtue of being on a same physical medium; creating one Connected Group node for LAN Emulation interfaces on a same Emulated Local Area Network (ELAN); creating one Connected Group node for each internal interface of any network device when the network device has an internal interface; creating one Connected Group node for the source device; creating one Connected Group node for the destination device; and creating one Connected Group node for each user interface on any network device when the network device has a user interface. (Application, page 4, line 21 to page 5, line 5.)

VI. GROUNDS FOR REJECTION TO BE REVIEWED ON APPEAL

A. Whether Claims 1-4, 10-17, and 23-36 are anticipated under 35 U.S.C. § 102(e) by Hsu, U.S. Patent No. 6,363,319 ("HSU".)

B. Whether Claims 5 and 18 are unpatentable under 35 U.S.C. § 103(a) over HSU in view of Chang, U.S. Patent Application Publication No. US 2003/0123448 A1 ("CHANG".)

VIII. ARGUMENT

A. The Office Erred by Considering the Wrong Evidence, and Erred in Failing to Disqualify the Hsu References Based on Applicant's Swear-Behind Affidavit.

This appeal arises principally because the Office has erred by mailing an Office Action referring to the wrong evidence, by failing to properly consider Applicant's antedating affidavit, and by failing to communicate with the Applicant. If the affidavit is properly considered, the Hsu patent should be removed as a reference and the claims should be allowed.

The Office mailed a non-final Office Action on September 25, 2003 (paper No. 9), which rejected Claims 1-4, 10-17, and 23-28 under 35 U.S.C. § 102(e) as allegedly anticipated by HSU, and rejected Claims 5 and 18 under 35 U.S.C. § 103 (a) as allegedly unpatentable over HSU in view of CHANG.[1]

Applicant filed a reply on November 26, 2003, accompanied by an antedating or "swear-behind" affidavit of the inventor pursuant to 37 C.F.R § 1.131, and by a supporting redacted disclosure document. The inventor avers in the affidavit that prior to August 31, 1999, which is the effective date of HSU as a reference, the inventor developed a working version of an embodiment of the invention in the United States, and that the embodiment was within the scope of claims 1-5, 10-18, and 23-28. The affidavit was supported by a disclosure document entitled "Method of Determining a Data Link Path in a Managed Network," which was redacted as permitted by applicable laws and rules. The inventor further avers that the redacted disclosure

[1] The Office Action stated that Claims 6-9 and 19-22 include allowable subject matter but objected to those claims as dependent upon a rejected base claim. This finding and these claims are not contested on appeal.

document was written prior to August 19, 1999. The redacted disclosure document states, in page 8, that the embodiment "is currently being used in Cisco PathTool to determine the layer 2 path."

Thus, the affidavit and disclosure document provides a showing of facts that are of character and weight as to establish a reduction to practice of the invention prior to HSU's effective date as ã reference.

The Office mailed a final action on February 11, 2004 (paper 12), which stated that the Affidavit had been considered but was ineffective to overcome HSU as a reference. However, the Office Action contains two key errors. First, the Office Action states that the evidence submitted is insufficient to establish a *conception* of the invention prior to the effective data of HSU as a reference. But Applicant properly established *reduction to practice*, did not attempt to establish conception, and had no need to establish conception coupled with diligence. Applicant's actual reduction to practice pre-dates HSU, which is all that is required to disqualify HSU as a reference. Because the Office Action focuses on conception, the basis of the Office Action is wrong and cannot support a rejection of the claims.

Second, the Office Action *cites and relies on evidence not submitted by Applicant.* Specifically, the Office Action states that evidence entitled "VIRTUAL DYNAMIC BACKBONE PROTOCOL (VDBP): TECHNICAL SPECIFICATION" and authored by Ryu et al. is not relevant to the claimed invention and does not credit the inventor in the present Application as being the author. Applicant did not submit any document by Ryu. Applicant does

not know an author named Ryu. The Office simply relied on the wrong papers. For this reason, the Office Action is unsupported.[2]

Compounding these errors, the Office has failed to communicate with the Applicant in a reasonable manner.

The Applicant's representative, patent agent David Lewis, called the Examiner on February 26, 2004 to discuss the inventor's Affidavit and the supporting documentation and to find out why the remarks in the Final Office Action referred to the Ryu document. In this conversation, Applicant learned that the Examiner possessed the wrong document. In response, on the same evening Mr. Lewis faxed the Examiner a second copy of the documents that were filed on November 26, 2003. The fax included a copy of the filing receipt, return postcard (which includes a page count for each of the documents), and transmittal sheet. These documents, in conjunction with the fax confirmation page count, show that the documents filed on November 26, 2003 included the document entitled "Method of Determining a Data Link Path in a Managed Network," and not the Ryu document.

On the next day, February 27, 2004, Mr. Lewis again called the Examiner to verify the receipt of the facsimile transmission. The Examiner confirmed receipt. Mr. Lewis told the Examiner that Mr. Lewis expected to receive another communication from the Examiner regarding the correct papers, and the Examiner said he would mail another communication.

About five (5) weeks passed without further communication. Therefore, on April 1, 2004, Mr. Lewis called the Examiner to ask if any communication was forthcoming or had already been sent. The Examiner said he did not recall promising another communication in the

[2] The Final Office Action then rejects Claims 1-4, 10-17, and 23-36 under 35 U.S.C. § 102(e) as being anticipated by HSU, and rejects Claims 5 and 18 under 35 U.S.C. § 103(a) as

telephone call of February 27, 2004. After consulting with his supervisor, the Examiner stated that the facsimile was considered only a draft response, and that a formal response was still necessary.

Accordingly, on April 2, 2004, the Applicant filed a formal Reply to the Final Office Action which included an Interview Summary, a third copy of the response to the previous Office Action filed on November 26, 2004, and a coversheet for the facsimile of February 26, 2004. Applicant's representatives have received no further communication from the Office.

The Applicant has properly filed a reply to the outstanding Office Action that places the case in condition for allowance, including a proper affidavit that the Office inexplicably has not considered. The Office should immediately and properly consider the reply, by considering the correct evidence submitted by Applicant on the basis of establishing a reduction to practice rather than conception.

B. Claims 1-4, 10-17, and 23-36 are Patentable under 35 U.S.C. § 102(e) Over HSU Because Applicant has Established Actual Reduction to Practice Before the Effective Date of HSU as a Reference.

If the Office properly considers the reply, affidavit and evidence previously submitted by Applicant, the HSU reference should be withdrawn and the claims should be withdrawn. The reply, affidavit and evidence establish reduction to practice of the claimed invention prior to the effective date of HSU as a reference.

When a prior U.S. patent is not a statutory bar, a 35 U.S.C. § 102(e) rejection can be overcome by antedating the filing date of the reference by submitting an affidavit or declaration under 37 C.F.R 1.131. *See* MPEP § 2136.05. A rejection based on 35 U.S.C. § 102(e) can be overcome by filing an affidavit or declaration under 37 C.F.R. § 1.131 showing prior invention,

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being unpatentable over HSU in view of CHANG.

if the reference is not a U.S. patent or a U.S. application claiming the same patentable invention as defined in 37 C.F.R. § 1.601(n.) *See* MPEP § 706.02(b.) Priority of invention is the essential thing to be shown under 37 C.F.R. § 1.131, and this may be done by any satisfactory evidence of fact. MPEP § 715.07, section I. Evidence proving reduction to practice of the invention, prior to the effective date of the reference, is fully effective to disqualify a reference, without a showing of conception and diligence. *See* MPEP § 715.07, section III. In general, proof of actual reduction to practice requires a showing that an apparatus actually existed and worked for its intended purpose. *Id.*

The effective date of HSU as a reference is August 31, 1999 – its filing date. Moreover, the filing date of HSU is less than one year prior to the filing date of the present application, which is March 14, 2000, and therefore HSU is not citable as a statutory bar under 35 U.S.C. § 102(b). Further, HSU generally claims methods, computer programs, and a system directed at selecting a route for a flow from a plurality of network paths connecting a source to a destination; the present invention generally claims methods, computer-readable medium, and an apparatus directed at determining a logical path in a managed network between a source device and a destination device at the data link layer. Thus, HSU and the present Application do not claim the same patentable invention.

The Applicant's affidavit under 37 C.F.R § 1.131 and the accompanying technical document entitled "Method of Determining a Data Link Path in a Managed Network" are sufficient to establish that the Applicant reduced the invention to practice before the effective date of HSU as a reference. Specifically, Applicant avers that the "Data Link Path" document was at a least a part of the technical documentation written by the Applicant before August 19, 1999. Affidavit, ¶4. The "Data Link Path" document states, at page 8: "**Cisco Use**: This method

is currently being used in Cisco PathTool to determine the layer 2 path." Further, the Applicant avers in paragraph 3 of the Affidavit that the working version he developed, and the written documentation he references, are for an embodiment of the invention that is within the scope of Claims 1-5, 10-18, and 23-28.

Thus, the affidavit and "Data Link Path" disclosure document is a showing of facts sufficient to establish that the present invention was reduced to practice on or before August 19, 1999 by developing a working version of the invention which worked for its intended purpose in an existing product. Applicant has established actual reduction to practice of the invention before HSU. The Office should withdraw HSU as a reference and allow Claims 1-4, 10-17, and 23-36.

C. Claims 5 and 8 Are Patentable Under 35 U.S.C. § 103(a) Over HSU in View of CHANG Because HSU is Not Available as a Reference

For the reasons stated above, Applicant has established actual reduction to practice of the invention before the effective date as a reference of HSU. Therefore, HSU is not available as prior art under 35 U.S.C. § 103(a). Accordingly, a combination of HSU with CHANG is improper, and cannot form a basis for rejecting Claims 5 and 8.

For this reason, the Applicant Claims 5 and 8 are patentable under 35 U.S.C. § 103(a) over HSU in view of CHANG.

IX. CONCLUSION AND PRAYER FOR RELIEF

Based on the foregoing, Applicant respectfully submits that the rejections of Claims 1-4, 10-17, and 23-36 under 35 U.S.C. § 102(e), and the rejections of Claims 5 and 8 under 35 U.S.C. § 103(a) lack an adequate basis in fact or law.

The Applicant therefore respectfully requests that the Board reverse the rejection of Claims 1-4, 10-17, and 23-36 under 35 U.S.C. § 102(e) over HSU, and further reverse the rejection of Claims 5 and 8 under 35 U.S.C. § 103(a) over HSU in view of CHANG. The Applicant also respectfully submits that, based on the foregoing, Claims 6-9 and 19-22 do not depend on a rejected base claim, and respectfully requests the Board to allow Claims 6-9 in the present Application.

Respectfully submitted,

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CLAIMS APPENDIX

1. (Original) A method for determining a logical path in a managed network between a source device and a destination device at a data link layer, the method comprising the computer-implemented steps of:
creating and storing a Connected Group Space representation of network devices based on a topology space representation of the network devices;
identifying an optimized path in the Connected Group Space representation;
transforming the optimized path into the topology space representation; and
creating and storing the optimized path that was transformed into the topology space representation as the data link layer path.

2. (Original) The method as recited in Claim 1, wherein the managed network is a managed IP network.

3. (Original) The method as recited in Claim 1, wherein the step of creating and storing a Connected Group Space representation further comprises the steps of:
identifying a set of Connected Group nodes associated with the Connected Group Space representation;
identifying Connected Group links that connect the Connected Group nodes; and
creating and storing information that represents the Connected Group links.

4. (Original) The method as recited in Claim 1, wherein the step of creating and storing a Connected Group Space representation further comprises the steps of:
identifying a subnet associated with the source device and the destination device;
determining a set of network links that link one or more network devices in the managed network; and
determining an assignment of ports of network devices.

5. (Original) The method as recited in Claim 1, wherein the step of creating and storing a Connected Group Space representation further comprises the steps of:
identifying all Virtual Local Area Networks (VLANs) associated with a subnet associated with the source device and the destination device; and
identifying all Emulated Local Area Networks (ELANs) associated with the subnet.

6. (Original) The method as recited in Claim 1, wherein the step of creating and storing a Connected Group Space representation further comprises the steps of:
creating one Connected Group node for any pairs of interfaces across a point-to-point link in the topology space representation;
creating one Connected Group node for any interfaces of the managed network that are directly connected by virtue of being on a same physical medium;
creating one Connected Group node for LAN Emulation interfaces on a same Emulated Local Area Network (ELAN);
creating one Connected Group node for each internal interface of any network device when the network device has an internal interface;
creating one Connected Group node for the source device;
creating one Connected Group node for the destination device; and
creating one Connected Group node for each user interface on any network device when the network device has a user interface.

7. (Original) The method as recited in Claim 6, further comprising the step of determining Connected Group links between Connected Group nodes in a subnet associated with the source device and the destination device.

8. (Original) The method as recited in Claim 7, further comprising the step of creating one Connected Group link for each pair of interfaces within each network device, wherein each interface is associated with the subnet of the source device and the destination device and is in a forwarding state.

9. (Original) The method as recited in Claim 8, further comprising the step of checking a spanning tree status for each interface within each network device to determine whether the interface is in the forwarding state.

10. (Original) The method as recited in Claim 1, wherein the step of identifying an optimized path in the Connected Group Space representation further comprises the step of finding a shortest path between a Connected Group source node and a Connected Group destination node.

11. (Original) The method as recited in Claim 10, further comprising the step of using a Dijkstra algorithm to find the shortest path between the Connected Group source node and the Connected Group destination node.

12. (Original) The method as recited in Claim 1, wherein the step of transforming the optimized path into the topology space representation further comprises the steps of:
identifying an ordered set of Connected Group nodes associated with the optimized path; and
identifying an ordered set of Connected Group links associated with the ordered set of Connected Group nodes.

13. (Original) The method as recited in Claim 12, further comprising the steps of:
identifying a pair of interfaces associated with each Connected Group link in the ordered set of Connected Group nodes associated with the optimized path; and
generating an ordered set of topology space links from the pairs of interfaces associated with Connected Group links.

14. (Original) A computer-readable medium carrying one or more sequences of instructions for determining a logical path in a managed network between a source device and a destination device at a data link layer, wherein execution of the one or more sequences of

instructions by one or more processors causes the one or more processors to perform the steps of:

creating and storing a Connected Group Space representation of network devices based on a topology space representation of the network devices;

identifying an optimized path in the Connected Group Space representation;

transforming the optimized path into the topology space representation; and

creating and storing the optimized path that was transformed into the topology space representation as the data link layer path.

15. (Original) The computer-readable medium as recited in Claim 14, wherein the managed network is a managed IP network.

16. (Original) The computer-readable medium as recited in Claim 14, wherein the step of creating and storing a Connected Group Space representation further comprises the steps of:

identifying a set of Connected Group nodes associated with the Connected Group Space representation;

identifying Connected Group links that connect the Connected Group nodes; and

creating and storing information that represents the Connected Group links.

17. (Original) The computer-readable medium as recited in Claim 14, wherein the step of creating and storing a Connected Group Space representation further comprises the steps of:

identifying a subnet associated with the source device and the destination device;

determining a set of network links that link one or more network devices in the managed network; and

determining an assignment of ports of network devices.

18. (Original) The computer-readable medium as recited in Claim 14, wherein the step of creating and storing a Connected Group Space representation further comprises the steps of:

identifying all Virtual Local Area Networks (VLANs) associated with a subnet associated with the source device and the destination device; and

identifying all Emulated Local Area Networks (ELANs) associated with the subnet associated with the source device and the destination device.

19. (Original) The computer-readable medium as recited in Claim 14, wherein the step of creating and storing a Connected Group Space representation further comprises the steps of:

creating one Connected Group node for any pairs of interfaces across a point-to-point link in the topology space representation;

creating one Connected Group node for any interfaces of the managed network that are directly connected by virtue of being on a same physical medium;

creating one Connected Group node for LAN Emulation interfaces on a same Emulated Local Area Network (ELAN);

creating one Connected Group node for each internal interface of any network device when the network device has an internal interface;

creating one Connected Group node for the source device;

creating one Connected Group node for the destination device; and

creating one Connected Group node for each user interface on any network device when the network device has a user interface.

20. (Original) The computer-readable medium as recited in Claim 19, further comprising the step of determining Connected Group links between Connected Group nodes in a subnet associated with the source device and the destination device.

21. (Original) The computer-readable medium as recited in Claim 20, further comprising the step of creating one Connected Group link for each pair of interfaces within each network device, wherein each interface is associated with the subnet of the source device and the destination device, and is in a forwarding state.

22. (Original) The computer-readable medium as recited in Claim 21, further comprising the step of checking a spanning tree status for each interface within each network device to determine whether the interface is in the forwarding state.

23. (Original) The computer-readable medium as recited in Claim 14, wherein the step of identifying an optimized path in the Connected Group Space representation further comprises the step of finding a shortest path between a Connected Group source node and a Connected Group destination node.

24. (Original) The computer-readable medium as recited in Claim 23, further comprising the step of using a Dijkstra algorithm to find the shortest path between the Connected Group source node and the Connected Group destination node.

25. (Original) The computer-readable medium as recited in Claim 14, wherein the step of transforming the optimized path into the topology space representation further comprises the steps of:

identifying an ordered set of Connected Group nodes associated with the optimized path; and

identifying an ordered set of Connected Group links associated with the ordered set of Connected Group nodes.

26. (Original) The computer-readable medium as recited in Claim 25, further comprising the steps of:

identifying a pair of interfaces associated with each Connected Group link in the ordered set of Connected Group nodes associated with the optimized path; and

generating an ordered set of topology space links from the pairs of interfaces associated with Connected Group links.

27. (Original) A computer data signal embodied in a carrier wave, the computer data signal carrying one or more sequences of instructions for determining a logical path in a managed network between a source device and a destination device at a data link layer, wherein execution of the one or more sequences of instructions by one or more processors causes the one or more processors to perform the steps of:

creating and storing a Connected Group Space representation of network devices based on a topology space representation of the network devices;

identifying an optimized path in the Connected Group Space representation;

transforming the optimized path into the topology space representation; and

creating and storing the optimized path that was transformed into the topology space representation as the data link layer path.

28. (Original) A computer apparatus comprising:

a processor; and

a memory coupled to the processor, the memory containing one or more sequences of instructions for determining a logical path in a managed network between a source device and a destination device at a data link layer, wherein execution of the one or more sequences of instructions by the processor causes the processor to perform the steps of:

creating and storing a Connected Group Space representation of network devices based on a topology space representation of the network devices;

identifying an optimized path in the Connected Group Space representation;

transforming the optimized path into the topology space representation; and

creating and storing the optimized path that was transformed into the topology space representation as the data link layer path.

29. (Previously Presented) The method of claim 1, further comprising the step of monitoring network devices by obtaining information about the network devices from information associated with the data linked path.

30. (Previously Presented) The method of claim 1, further comprising the step of obtaining diagnostic information by obtaining information about the network devices from information associated with the data linked path.

31. (Previously Presented) The method of claim 1, wherein the data link path is a trace of a path determinable from a bridge forwarding table.

32. (Previously Presented) The method of claim 1, wherein the data link path is verifiable by comparing information related to the data link path to information from a bridge forwarding table.

33. (Previously Presented) The computer readable medium of claim 14, wherein the instructions further comprise the step of monitoring network devices by obtaining information about the network devices from information associated with the data linked path.

34. (Previously Presented) The computer readable medium of claim 14, wherein the instructions further comprise the step of obtaining diagnostic information by obtaining information about the network devices from information associated with the data linked path.

35. (Previously Presented) The computer readable medium of claim 14, wherein the data link path is a trace of a path determinable from a bridge forwarding table.

36. (Previously Presented) The computer readable medium of claim 14, wherein the data link path is verifiable by comparing information related to the data link path to information from a bridge forwarding table.